

on wrist and hand. In addition, if rapid disengagement is required for safety or other reasons, the handle support will simply fall off the arm once the grip is released.

5 In this manner a handle support is constructed for efficiently and comfortably distributing forces from the wrist and hand of a user of a hand held tool or appliance to the forearm. This is accomplished by a structure which is designed to fit the size of the majority of users and provides easy installation on the arm. It should be clear that this invention can be adapted to improve the performance and ease of use of a wide variety of tools, appliances and implements.

I claim:

1. A device for distributing forces from the hand and wrist of a user to the forearm of the user in conjunction with a hand held tool or appliance, having a forward end in the general
20 direction of the hand and a rearward end in the general direction of the forearm, said device comprising:

an attachment post, having a first longitudinal axis, constructed with a coupling at said forward end for attachment
25 to said tool or appliance;

a grip having a second longitudinal axis fixed to said attachment post and extending rearward therefrom, with said second axis extending transverse to said first axis;

a seat fixed to said grip and extending rearward therefrom in a plane transverse to said second axis; and

5 a brace constructed substantially in the form of a helix, said helix circumscribing an open space to accommodate the arm of the user, said brace fixed to said seat and extending rearward therefrom.

10 2. A device for distributing forces from the hand and wrist of a user to the forearm of the user in conjunction with a hand held tool or appliance, having a forward end in the general direction of the hand and a rearward end in the direction of the forearm, said device, as described in claim 1, wherein said open area circumscribed by said brace has a conical shape.

15 3. A device for distributing forces from the hand and wrist of a user to the forearm of the user in conjunction with a hand held tool or appliance, having a forward end in the general
20 direction of the hand and a rearward end in the direction of the forearm, said device, as described in claim 1, wherein said attachment post, said grip, said seat, and said brace are integrally formed as sections of a body.

25 4. A device for distributing forces from the hand and wrist of a user to the forearm of the user in conjunction with a hand held tool or appliance, having a forward end in the general direction of the hand and a rearward end in the general

direction of the forearm, said device, as described in claim 3, wherein said body is molded from a plastic material.

5. A device for distributing forces from the hand and wrist of a user to the forearm of the user in conjunction with a hand held tool or appliance, having a forward end in the general direction of the hand and a rearward end in the direction of the forearm, said device, as described in claim 3, wherein said body is cast from plastic or aluminum.

6. A device for distributing forces from the hand and wrist of a user to the forearm of the user in conjunction with a hand held tool or appliance, having a forward end in the general direction of the hand and a rearward end in the direction of the forearm, said device, as described in claim 1, wherein said first and second axes intersect in an acute angle.

7. A device for distributing forces from the hand and wrist of a user to the forearm of the user in conjunction with a hand held tool or appliance, having a forward end in the general direction of the hand and a rearward end in the direction of the forearm, said device, as described in claim 6, wherein said second axis and said plane of the seat intersect at an angle which is supplementary to said acute angle.

8. A device for distributing forces from the hand and wrist of a user to the forearm of the user in conjunction with a hand held tool or appliance, having a forward end in the general direction of the hand and a rearward end in the direction of the forearm,

said device, as described in claim 1, wherein the pitch of said helix decreases from forward to rearward.

9. A device for distributing forces from the hand and wrist of a user to the forearm of the user in conjunction with a hand held tool or appliance, having a forward end in the general direction of the hand and a rearward end in the direction of the forearm, said device, as described in claim 1, wherein the radius of curvature of the helix increases from forward to rearward.

10. A device for distributing forces from the hand and wrist of a user to the forearm of the user in conjunction with a hand held tool or appliance, having a forward end in the general direction of the hand and a rearward end in the direction of the forearm, said device, as described in claim 1, wherein said brace is constructed with a substantially straight portion at its distal end to insure space for insertion of the arm into said conical space.

11. A device for distributing forces from the hand and wrist of a user to the forearm of the user in conjunction with a hand held tool or appliance, having a forward end in the general direction of the hand and a rearward end in the direction of the forearm, said device, as described in claim 1, wherein said brace is oriented with respect to the other elements of the device so that the arm is circumscribed on at least three sides.

12. A device for distributing forces from the hand and wrist of a user to the forearm of the user in conjunction with a hand

held tool or appliance, having a forward end in the general direction of the hand and a rearward end in the direction of the forearm, said device, as described in claim 1, wherein said brace is oriented with respect to the other elements of the device so that the wrist is free to flex to allow the hand to twist on said grip about said second axis.

13. A device for distributing forces from the hand and wrist of a user to the forearm of the user in conjunction with a hand held tool or appliance, having a forward end in the general direction of the hand and a rearward end in the direction of the forearm, said device, as described in claim 1, wherein said brace is oriented with respect to the other elements of the device so that the wrist is free to flex about a third axis displaced rearward of said second axis and transverse thereto.

14. A device for distributing forces from the hand and wrist of a user to the forearm of the user in conjunction with a hand held tool or appliance, having a forward end in the general direction of the hand and a rearward end in the direction of the forearm, said device, as described in claim 1, wherein said brace is oriented with respect to the other elements of the device so that the wrist is free to flex to allow the hand to twist on said grip about said second axis and to flex about a third axis displaced rearward of said second axis and transverse thereto, said flexing operating to lock the wrist and brace to distribute forces away from the wrist.

15. A device for distributing forces from the hand and wrist of a user to the forearm of the user in conjunction with a hand held tool or appliance, having a forward end in the general direction of the hand and a rearward end in the direction of the forearm, said device, as described in claim 1, wherein said tool or appliance is releasably secured to said attachment post by means of a coupling.

16. A device for distributing forces from the hand and wrist of a user to the forearm of the user in conjunction with a hand held tool or appliance, having a forward end in the general direction of the hand and a rearward end in the direction of the forearm, said device, as described in claim 15, wherein said coupling comprises a keyless chock.

17. A device for distributing forces from the hand and wrist of a user to the forearm of the user in conjunction with a hand held tool or appliance, having a forward end in the general direction of the hand and a rearward end in the direction of the forearm, said device, as described in claim 1, wherein said seat is contoured to fit the shape of the wrist.

18. A device for distributing forces from the hand and wrist of a user to the forearm of the user in conjunction with a hand held tool or appliance, having a forward end in the general direction of the hand and a rearward end in the direction of the forearm, said device comprising:

an attachment post having a first longitudinal axis constructed with a coupling at said forward end for attachment to said tool or appliance;

5 a grip having a second longitudinal axis fixed to said attachment post and extending rearward therefrom, with said second axis extending transverse to said first axis; and

a brace constructed substantially in the form of a helix, said helix circumscribing an open space to accommodate the arm of the user, said brace fixed to said grip and extending rearward therefrom.

19. A device for distributing forces from the hand and wrist of a user to the forearm of the user in conjunction with a hand held tool or appliance, having a forward end in the general direction of the hand and a rearward end in the direction of the forearm, said device, as described in claim 18, wherein said open area circumscribed by said brace has a conical shape.

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20. A device for distributing forces from the hand and wrist of a user to the forearm of the user in conjunction with a hand held tool or appliance, having a forward end in the general direction of the hand and a rearward end in the direction of the forearm, said device, as described in claim 18, wherein said attachment post, said grip, and said brace are integrally formed as sections of a body.

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21. A device for distributing forces from the hand and wrist of a user to the forearm of the user in conjunction with a hand held tool or appliance, having a forward end in the general direction of the hand and a rearward end in the general direction of the forearm, said device, as described in claim 20, wherein said body is molded from a plastic material.

22. A device for distributing forces from the hand and wrist of a user to the forearm of the user in conjunction with a hand held tool or appliance, having a forward end in the general direction of the hand and a rearward end in the direction of the forearm, said device, as described in claim 20, wherein said body is cast from plastic or aluminum.

23. A device for distributing forces from the hand and wrist of a user to the forearm of the user in conjunction with a hand held tool or appliance, having a forward end in the general direction of the hand and a rearward end in the direction of the forearm, said device, as described in claim 18, wherein said first and second axes intersect in an acute angle.

24. A device for distributing forces from the hand and wrist of a user to the forearm of the user in conjunction with a hand held tool or appliance, having a forward end in the general direction of the hand and a rearward end in the direction of the forearm, said device, as described in claim 18, wherein the pitch of said helix decreases from forward to rearward.

25. A device for distributing forces from the hand and wrist of a user to the forearm of the user in conjunction with a hand held tool or appliance, having a forward end in the general direction of the hand and a rearward end in the direction of the forearm, said device, as described in claim 18, wherein the radius of curvature of the helix increases from forward to rearward.

26. A device for distributing forces from the hand and wrist of a user to the forearm of the user in conjunction with a hand held tool or appliance, having a forward end in the general direction of the hand and a rearward end in the direction of the forearm, said device, as described in claim 18, wherein said brace is constructed with a substantially straight portion at its distal end to insure space for insertion of the arm into said conical space.

27. A device for distributing forces from the hand and wrist of a user to the forearm of the user in conjunction with a hand held tool or appliance, having a forward end in the general direction of the hand and a rearward end in the direction of the forearm, said device, as described in claim 18, wherein said brace is oriented with respect to the other elements of the device so that the arm is circumscribed on at least three sides of said arm.

28. A device for distributing forces from the hand and wrist of a user to the forearm of the user in conjunction with a hand held tool or appliance, having a forward end in the general

direction of the hand and a rearward end in the direction of the forearm, said device, as described in claim 18, wherein said brace is oriented with respect to the other elements of the device so that the wrist is free to flex to allow the hand to
5 twist on said grip about said second axis.

29. A device for distributing forces from the hand and wrist of a user to the forearm of the user in conjunction with a hand held tool or appliance, having a forward end in the general direction of the hand and a rearward end in the direction of the forearm, said device, as described in claim 18, wherein said brace is oriented with respect to the other elements of the device so that the wrist is free to flex about a third axis displaced rearward of said second axis and transverse thereto.

30. A device for distributing forces from the hand and wrist of a user to the forearm of the user in conjunction with a hand held tool or appliance, having a forward end in the general direction of the hand and a rearward end in the direction of the forearm, said device, as described in claim 18, wherein said
20 brace is oriented with respect to the other elements of the device so that the wrist is free to flex to allow the hand to twist on said grip about said second axis and to flex about a third axis displaced rearward of said second axis and transverse
25 thereto, said flexing operating to lock the wrist and brace to distribute forces away from the wrist.

31. A device for distributing forces from the hand and wrist of a user to the forearm of the user in conjunction with a hand

held tool or appliance, having a forward end in the general direction of the hand and a rearward end in the direction of the forearm, said device, as described in claim 18, wherein said tool or appliance is releasably secured to said attachment post by means of a coupling.

32. A device for distributing forces from the hand and wrist of a user to the forearm of the user in conjunction with a hand held tool or appliance, having a forward end in the general direction of the hand and a rearward end in the direction of the forearm, said device, as described in claim 31, wherein said coupling comprises a keyless chock.

33. A brace for distributing forces from the hand and wrist of a user to the forearm of the user in conjunction with a grip of a hand held tool or appliance, said brace having a forward end in the general direction of the hand and a rearward end in the direction of the forearm, said brace comprising:

a body constructed substantially in the form of a helix, said helix circumscribing an open space to accommodate the arm of the user, said brace attached to said grip and extending rearward therefrom.

34. A brace for distributing forces from the hand and wrist of a user to the forearm of the user in conjunction with a grip of a hand held tool or appliance, said brace having a forward end in the general direction of the hand and a rearward end in the direction of the forearm, as described in claim 33, further

comprising a seat attached to said grip and integrally formed with said body and extending between said grip and said body.

5 35. A brace for distributing forces from the hand and wrist of a user to the forearm of the user in conjunction with a grip of a hand held tool or appliance, said brace having a forward end in the general direction of the hand and a rearward end in the direction of the forearm, as described in claim 34, wherein said brace and seat are integrally formed with said grip.

36. A brace for distributing forces from the hand and wrist of a user to the forearm of the user in conjunction with a grip of a hand held tool or appliance, said brace having a forward end in the general direction of the hand and a rearward end in the direction of the forearm, as described in claim 33, wherein said open area circumscribed by said brace has a conical shape.

20 37. A brace for distributing forces from the hand and wrist of a user to the forearm of the user in conjunction with a grip of a hand held tool or appliance, said brace having a forward end in the general direction of the hand and a rearward end in the direction of the forearm, as described in claim 33, wherein the pitch of said helix decreases from forward to rearward.

25 38. A brace for distributing forces from the hand and wrist of a user to the forearm of the user in conjunction with a grip of a hand held tool or appliance, said brace having a forward end in the general direction of the hand and a rearward end in the direction of the forearm, as described in claim 33, wherein the

radius of curvature of the helix increases from forward to rearward.

5 39. A brace for distributing forces from the hand and wrist of a user to the forearm of the user in conjunction with a grip of a hand held tool or appliance, said brace having a forward end in the general direction of the hand and a rearward end in the direction of the forearm, as described in claim 33, wherein said brace is constructed with a substantially straight portion at its distal end to insure space for insertion of the arm into said conical space.

40. A brace for distributing forces from the hand and wrist of a user to the forearm of the user in conjunction with a grip of a hand held tool or appliance, said brace having a forward end in the general direction of the hand and a rearward end in the direction of the forearm, as described in claim 33, wherein said brace is oriented with respect to the other elements of the device so that the wrist is free to flex to allow the hand to
20 twist on said grip about said second axis.

41. A brace for distributing forces from the hand and wrist of a user to the forearm of the user in conjunction with a grip of a hand held tool or appliance, said brace having a forward end in
25 the general direction of the hand and a rearward end in the direction of the forearm, as described in claim 33, wherein said brace is oriented with respect to the other elements of the device so that the wrist is free to flex about a third axis displaced rearward of said second axis and transverse thereto.

42. A brace for distributing forces from the hand and wrist of a user to the forearm of the user in conjunction with a grip of a hand held tool or appliance, said brace having a forward end in the general direction of the hand and a rearward end in the direction of the forearm, as described in claim 35, wherein said brace is molded from a plastic material.

43. A brace for distributing forces from the hand and wrist of a user to the forearm of the user in conjunction with a grip of a hand held tool or appliance, said brace having a forward end in the general direction of the hand and a rearward end in the direction of the forearm, as described in claim 35, wherein said brace is cast from plastic or aluminum.

44. A brace for distributing forces from the hand and wrist of a user to the forearm of the user in conjunction with a grip of a hand held tool or appliance, said brace having a forward end in the general direction of the hand and a rearward end in the direction of the forearm, as described in claim 33, wherein said brace is oriented with respect to the other elements of the device so that the wrist is free to flex to allow the hand to twist on said grip about said second axis and to flex about a third axis displaced rearward of said second axis and transverse thereto, said flexing operating to lock the wrist and brace to distribute forces away from the wrist.